

ACKNOWLEDGEMENTS

We thank Dr. A.K. Bandyopadhyay, Director, C.A.R.I. for encouragement and Drs. R.G. Booth and D. MacFarlane of the International Institute of Entomology, London, for identification.

May 12, 1999

PRASHANTH MOHANRAJ

K. VEENAKUMARI

Central Agricultural Research Institute

Port Blair 744 103,

Andaman and Nicobar Islands,

India.

26. ON *DAPHNIOPSIS TIBETANA* SARS, 1903, (CLADOCERA) COLLECTED FROM A HIGH ALTITUDE HIMALAYAN LAKE, INDIA

(With seven text-figures)

Four species of the genus *Daphniopsis* have so far been described, viz. *D. pusilla*, *D. studeri*, *D. tibetana* all by Sars (1903) and *D. australis* by Sergeev and Williams (1985). All the four species occur in saline water, among which *D. tibetana* is found in high altitude Himalayan saline lakes in India, Nepal, Tibet and Mongolia. After the original description of *D. tibetana* by Sars (1903) from Tibet, Brehm and Woltereck (1939) recorded the same species as *Daphnia tibetana* from Panggong Tso in Ladakh. The present report is a record of this species after a gap of five decades. A detailed description, and new morphological characters have been given, based on a few samples collected from Panggong Tso Lake.

A few samples collected during one of the regular trips to high altitude Himalayan lakes by the Zoological Survey of India, Solan, at Panggong Tso lake on August 23, 1998, were sent to the author for identification. The sample consists of thousands of adult female *Daphniopsis tibetana*, as well as *Cyclops ladacanus*(?) and *Gammarus pulex*(?). The materials used in this study include mature females as well as different pre-adult instars sorted from the collections. The lake Panggong Tso is in the Ladakh district of the western Himalayan region, at an altitude of 4241 m. It is an oligotrophic saline lake (pH 9.35). Other physico-chemical parameters were not recorded due to bad weather conditions.

DESCRIPTION

Daphniopsis tibetana Sars 1903

Daphniopsis tibetana Sars 1903. Acad. Asc. St. Petersburg. 8 p. 171.

Daphniopsis tibetana Brehm & Woltereck, 1939. Int. Rev. ges. Hydrobiol. 1-19.

Female: Body size 2.62 mm; Body width 1.65 mm. Head wide and depressed, slightly produced near eye and ventral edge slightly concave. Rostrum prominent and blunt. Fornix extending in front and evenly arched. Eye moderately large, irregularly shaped, ocellus rounded and relatively large.

Carapace without dorsal carina or a posterior spine and not denticulate. Body slightly compressed and oval, dorsal and ventral margins evenly arched (Fig. 1). Postero-ventral margin with numerous submarginal spines. In adult females, carapace slightly larger than wide. Antennules small, immovable, not projecting beyond rostrum, with terminal sensory papillae and subterminal seta. Antennae large, setal formula (0-0-1-3/1-1-3). Hepatic caeca large and coiled as in other daphnids. Trunk limb 2 (Figs. 2-6): external branch of endopodite bearing three slightly chitinated, subequal setae (Figs. 2, 6) gnathobase 18 setae, (Fig. 2) with a second seta different in structure (Figs. 3, 4) from the sensory papilla of gnathobase (Fig. 5). Postabdomen (Fig. 7) tapering distally, dorsal margin sinuate with 10-12 anal denticles. Ventral margin of the

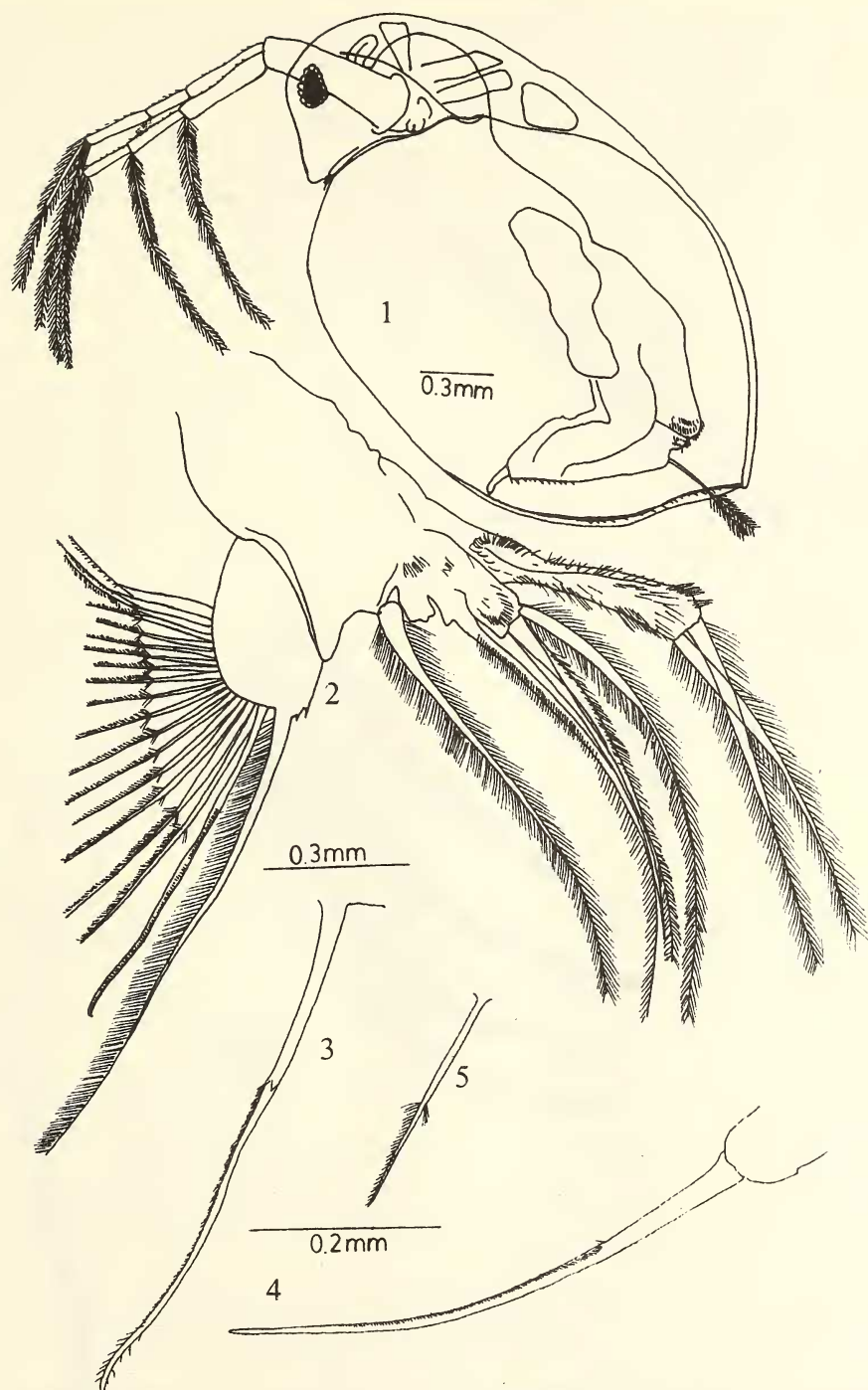


Fig. 1-5: 1. *Daphniopsis tibetana*: female - lateral view; 2. Trunk limb II, 3-4. Second seta of gnathobase, 5. Sensory papilla of gnathobase.

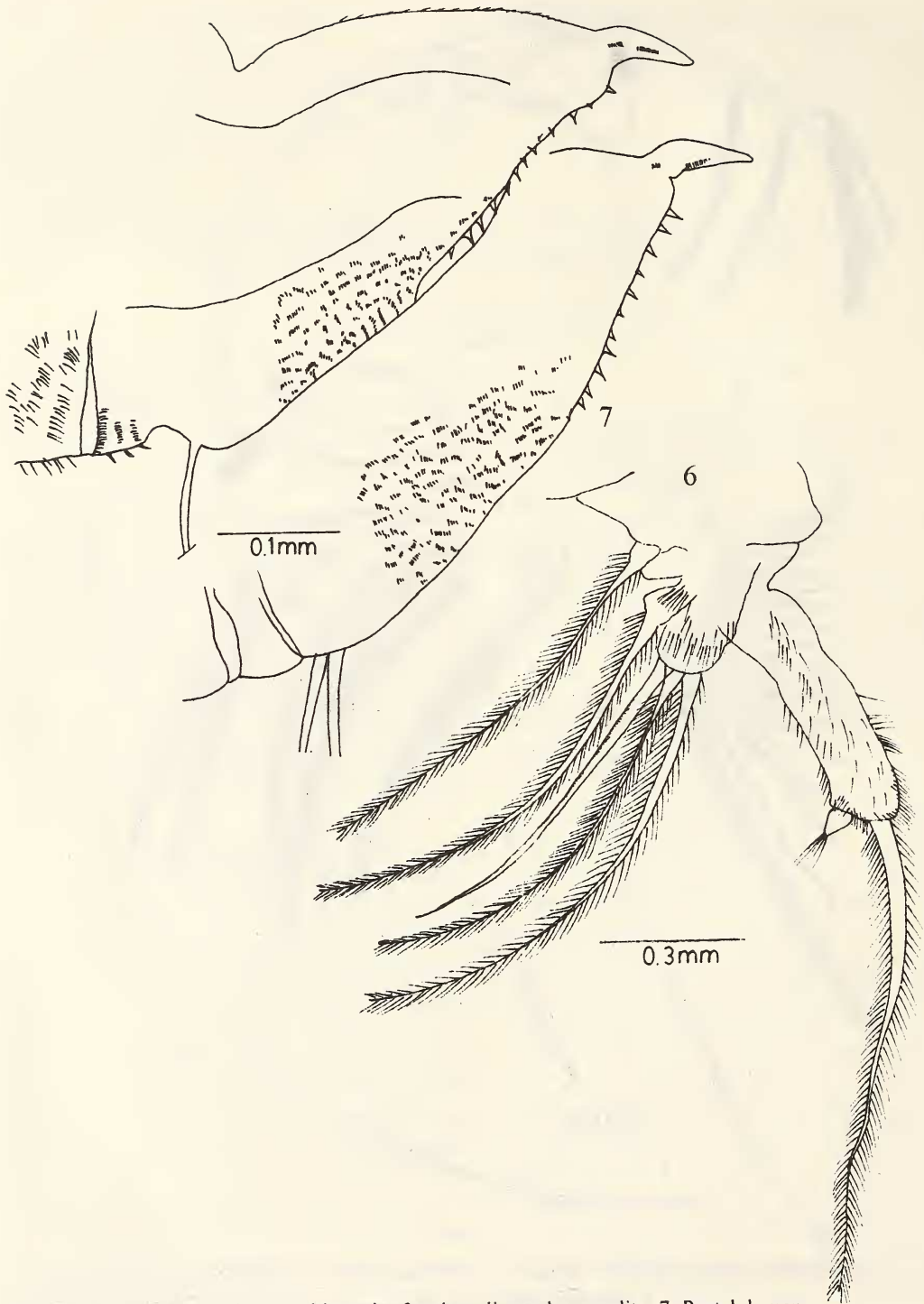


Fig. 6-7: 6. Distal part of external branch of endopodite and exopodite; 7. Postabdomen

postabdomen with a series of small spines. Claws with proximal and middle combs of lateral setae. Abdominal process long.

Males: Not found in the present study.

Remarks: Michael & Sharma (1988), while compiling the Fauna of India, Cladocera, described *Daphniopsis tibetana* from the literature only since no material was available to them. However, Chiang and Du (1979) described *D. tibetana* from China with a maximum adult size of 2.30-2.90 mm, which is slightly larger than the present record of 2.62 mm. Sergeev and Williams (1985) separated *D. australis*, a new species, from *D. pusilla* in Australian salt lakes based on the trunk limb morphology, with a body size of 1.82 ± 0.36 mm, which is relatively smaller than *D. tibetana* in this study. Löffler (1969) studied the general limnology of 24 high altitude lakes of Khumbu area, Nepal and recorded three species of Cladocera among which *D. tibetana* is one. A decade after the visit of Löffler, Swar and Fernando (1979) recorded *D. tibetana* along with 22 other species of Cladocera from Pokhara Valley, Nepal. However, Dumont and Van der

Velde (1977) who surveyed the same area, could not collect *D. tibetana* from Nepal. The ephippial morphological studies conducted by Kokkinn and Williams (1987) found six morphotypes among the species of *Daphniopsis* in the salt lakes of Australia. However, in India no such studies have been undertaken due to the remoteness of the habitat where *D. tibetana* is found.

ACKNOWLEDGEMENTS

I thank Dr. J.R.B. Alfred, Director Zoological Survey of India for sending the lake collections to me for identification and facilities to conduct this study. I thank Shri A. Sivakumar, Technical Assistant, ICMAM Project, MBS. ZSI for typing the manuscript.

August 6, 1998

K. VENKATARAMAN
Marine Biological Station,
Zoological Survey of India,
100, Santhome High Road,
Chennai 600 028,
Tamil Nadu,
India.

REFERENCES

- BREHM, V. & R. WOLTERECK (1939): Die Daphniden der Yale-North India Expedition. *Int. Rev. ges. Hydrobiol.* 48: 159-172.
- CHIANG, S. & N. DU (1979): Fauna of Sinica: Crustacea, Cladocera, Science Press, Academia Sinica, Peking, 297 pp.
- DUMONT, H.J. & J. VAN DER VELDE (1977): Report on a collection of Cladocera and Copepoda from Nepal. *Hydrobiologia* 53(1): 55-65.
- KOKKINN, M.J. & N.D. WILLIAMS (1987): Is ephippial morphology a useful taxonomic descriptor in the Cladocera? An examination based on a study of *Daphniopsis* from Australian salt lakes *Hydrobiologia* 145: 67-73.
- LOFFLER, H. (1969): High altitude lakes in Mt. Everest region. *Verh. Internat. Verein. Limnol.* 17: 373-385.
- MICHAEL, R.G. & B.K. SHARMA (1988): Fauna of India, Cladocera. (ed.) The Director, Zoological Survey of India, Calcutta. 262 pp.
- SARS, G.O. (1903): On the Crustacean Fauna of Central Asia. Part II. Cladocera *Ann. Mus. Zool. Acad. Sci. St. Petersb.* 8: 157-194.
- SERGEEV, V. & W.D. WILLIAMS (1985): *Daphniopsis australis* sp. nov. (Crustacea : Cladocera), a further daphniid in Australian salt lakes. *Hydrobiologia* 120: 119-128.
- SWAR, D.B. & C.H. FERNANDO (1979): Cladocera from Pokhara Valley, Nepal with notes on distribution. *Hydrobiologia* 66: 113-128.

27. *INDIGOFERA MYSORENSIS* ROTTLER EX DC. (LEGUMINOSAE : PAPILIONOIDEAE) — AN ENDEMIC SPECIES OF PENINSULAR INDIA FROM WEST BENGAL

During a plant collection tour in Uttar Dinajpur District, West Bengal, specimens of a

branched, erect, sticky, villous undershrub were collected from the deforested dry sandy areas of